

DOCUMENT RESUME

ED 265 515

CS 008 287

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TITLE Twelve-Month Profile of U. S. Navy Recruits on Reading Comprehension and Educationally Related Characteristics: June, 1984, to May, 1985.
PUB DATE Nov 85
NOTE 28p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (14th, Biloxi, MS, November 6-8, 1985).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Adult Education; *Military Personnel; Military Training; Planning; *Reading Achievement; *Remedial Instruction; *Remedial Programs; *Remedial Reading; Social Characteristics; *Student Characteristics
IDENTIFIERS *Naval Training; Navy

ABSTRACT

Academic Remedial Training (ART) is a program providing remedial instruction in reading and verbal and study skills to Naval recruits who have scored below the sixth grade reading level on a standardized reading test (Gates-MacGinitie, 1978) or who have encountered academic difficulty completing recruit training. To determine whether data reflecting educational characteristics of Naval recruits over a 12-month period could be used to better manage the allocation and utilization of ART resources, the relationships among several characteristics were examined. Of the information routinely summarized monthly, the following variables were used: years of education, high school graduation status, month of entry, aptitude test scores (Armed Services Vocational Aptitude Battery, 1967-80), and reading comprehension grade level scores (RGL). Six null hypotheses reflecting various comparisons of these characteristics were tested statistically. The results indicate that recruits who enter the Navy are likely to vary in different months of the year according to the following variables: the percentage of those who score above and below the sixth grade reading level (6.0 RGL), the percentage of high school graduates, the percentage of high school graduates who score above and below 6.0 RGL, and the percentage of high school graduates who score below 6.0 RGL. The information gathered through consistent monitoring and analysis of monthly reports concerning the composition of the recruit population is valuable and can aid in the more efficient management of ART resources. (LLZ)

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TWELVE-MONTH PROFILE OF U.S. NAVY RECRUITS ON READING
COMPREHENSION AND EDUCATIONALLY RELATED CHARACTERISTICS:
JUNE, 1984, TO MAY, 1985

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Paper presented at the Fourteenth Annual Meeting of the Mid-South Educational
Research Association in Biloxi, Mississippi, November 6-8, 1985

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Introduction

The Department of the Navy initiated programs designed to remediate deficiencies in academic skills among selected personnel as early as the World War II time period. However, an official policy on remedial training in basic skills was not established until a policy statement was issued by the Secretary of the Navy on 2 June 1978 that stated: "It is the policy of the Department of the Navy to provide, when indicated, on-duty remedial job-relevant basic skills training in order to fill personnel requirements" (SECNAVINST 1510.3, 1978, p. 1). [Job-relevant basic skills are defined as "those capabilities prerequisite to efficient completion of Navy training programs, adequate job performance and career advancement. Notable among these are literacy, study and computational skills" (p. 1).] In addition to new programs being developed as a result of the policy statement, fundamental skills training programs that were already operational were given official recognition by the Department of the Navy. One operational program, Academic Remedial Training (ART), provides instruction for recruits in basic reading and study skills as well as verbal skills needed to complete the demanding academic requirements of recruit training.

The ART Program was initiated officially by the Naval Technical Training Command in 1967 at each of the Navy's three Recruit Training Centers as a remedial reading course. The courses at the three sites evolved with different curricula and testing plans due to the autonomy permitted in course development. Eventually, the Chief of Naval Technical Training recognized a need for a standardized curriculum and testing plan. The prescribed curriculum and testing procedures were implemented in 1978 (CNTECHTRAINST 1540.42). The scope of the curriculum included both reading and study skills (Chief of Naval Technical Training, 1978; Chief of Naval Technical Training, 1979; Bowman, Kaiser, Jones, & Petry, 1984). A verbal skills curriculum that focuses on

listening and speaking skills, primarily for recruits who speak English as a second language, was added to the program at the Orlando and San Diego Recruit Training Centers in 1981 and the Great Lakes Recruit Training Center in 1985. (Chief of Naval Technical Training, 1980).

The commitment of the Navy to provide fundamental skills training for enlisted personnel was reiterated through a policy statement by the Chief of Naval Operations in 1982. Specific skills identified for remediation were reading, mathematics, and communication skills (OPNAVINST 1510.11, 1982, p. 1). The policy states also that "A major goal of enlisted fundamental skills training is to achieve a minimum reading competency of the ninth grade" (p. 1).

Historically, the singular purpose of ART has been to assist recruits in acquiring the language skills required to complete recruit training successfully. While the ultimate purpose remains the same, the addition of the verbal skills component to the program expanded the scope of remediation to include listening and speaking skills of recruits who are primarily speakers of English as a second language. The population served by the program has been delimited to enlisted personnel who have not begun recruit training or have encountered academic difficulty after beginning recruit training.

The implementation of the standardized ART reading curriculum required the use of a Computer-Managed Instruction (CMI) system to perform test scoring functions. The CMI system is utilized to score the screening, diagnostic, and criterion tests employed in the program. A product of using the CMI system for test scoring is a data base on the reading comprehension skill levels and educationally related characteristics of all Navy recruits. In addition, data on skill deficiencies and criterion test performance of ART students are available from computer records. Monthly reports on the educational, aptitudinal, and reading characteristics of the total recruit accessions are

routinely prepared and distributed to ART Program management personnel.

Problem

The problem defined for this study was to investigate the reading comprehension and educationally related characteristics and relationships among selected variables that describe the Navy's recruit population. The recruits who entered the Navy between June, 1984, and May, 1985, were the subjects who provided the data to address the problem. The variable of primary interest was the recruit's grade level score on reading comprehension. Other variables employed in the study were years of education, aptitude score, high school graduation status, and month of entry into the Navy.

Hypotheses

After performing descriptive analyses of the data on selected variables, six null hypotheses were tested statistically to identify differences among recruits on particular variables. The hypotheses tested were the following:

1. There are no differences in the distributions of recruits classified by reading grade level (RGL) category and month of entry into the Navy.
2. There is no difference in the distributions of recruits classified by high school graduation status and month of entry into the Navy.
3. There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy.
4. There is no difference in the distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy.
5. There is no difference in the distributions of recruits scoring below

the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy.

6. There is no difference in the proportions of high school graduate and non-high school graduate recruits who score below the 6.0 RGL criterion.

The .05 level of significance was used in testing the hypotheses.

The significance of the study is based on two considerations. First, the analyses could identify factors on which the recruit population varies across a 12-month period. Such information would be useful to ART Program management personnel in planning for the allocation and utilization of resources (e.g. staff, facilities, and instructional materials) more efficiently. In particular, variability in the numbers of recruits who need reading remediation in language skills would have a direct effect on the requirements for staffing and instructional materials. Second, this study could demonstrate the desirability of using CMI system data to monitor and manage the ART Program. Since these data are reported routinely to program management personnel, the data are readily available to use in making decisions regarding program needs and operations.

Related Research

Many research studies have been conducted on the reading skill levels of Navy enlisted personnel and training materials because of the importance of reading skills for success in training and job performance. Hoibery, Mysham, and Berry (1974) reported a significant relationship between reading skills and successful completion of the first enlistment term in the Navy. Biersner (1975) found that many Navy training manuals are written at the 12th grade reading ability level or higher. Zierdt (1976) and Sticht (1982) concluded that the reading abilities of many recruits do not meet the skill requirements

of widely used Navy materials.

Several studies have described the reading skill levels of the Navy recruit population based on the Gates-MacGinitie Reading Tests. Duffy and Nugent (1978) found a median RGL of 11.9 on comprehension as a result of testing 31,575 recruits at the Recruit Training Center in San Diego between May, 1974, and May, 1975. The data showed that 2.8% of the recruits scored below the 4.0 RGL and 9.6% scored below the 6.0 RGL. They concluded that the reading skill levels of many recruits are well below the readability levels of the print materials used in recruit training and daily job tasks.

Bowman and Kerr (1979) reported that a sample of 14,503 recruits tested in the first few months of 1979 had a median RGL of 11.0 on comprehension while 1.1% scored below the 4.0 RGL and 5.2% scored below the 6.0 RGL. In a one-year study (1981), they found that 79,350 recruits who entered the Navy between June, 1980, and May, 1981, had a median RGL of 11.0 on comprehension with .7% scoring below the 4.0 RGL and 4.3% scoring below the 6.0 RGL. In a subsequent study (1982) based on 84,123 recruits who entered the Navy between June, 1981, and May, 1982, they reported a median RGL of 11.2 while .5% scored below the 4.0 RGL and 3.6% scored below the 6.0 RGL. They found in a more recent study (1983) on 77,347 recruits who entered the Navy between June, 1982, and May, 1983, that the median RGL was 11.4 with .9% scoring below the 4.0 RGL and 3.8% scoring below the 6.0 RGL. Kerr, Bowman, and Darcy (1984) indicated in a study on 67,740 recruits who entered the Navy between June, 1983, and May, 1984, that the median RGL was 12.1 with .7% scoring below the 4.0 RGL and 2.9% scoring below the 6.0 RGL.

The research studies indicate that reading skills are strongly related to the success of Navy enlisted personnel while the readability levels of many training and job materials are very demanding with respect to the skill levels

required for their use. Descriptive research data reveal that the reading comprehension levels of recruits declined between 1974-75 and 1979. Later studies suggest that the median reading comprehension level of recruits has begun to increase after a brief period of stability at approximately the 11th grade level.

Procedures

The data utilized in this study were obtained from the monthly CMI reports on Navy recruit characteristics and test performance. Data were available on 77,674 recruits who entered the Navy between June, 1984, and May, 1985. The reports provided data on four variables used in this study: years of education, high school graduation status, aptitude test scores, and reading comprehension grade level scores. A fifth variable, month of entry into the Navy, was defined by the month for which each report was prepared.

The Gates-MacGinitie Reading Comprehension Test (1978), hereafter called the Gates, and the Armed Services Vocational Aptitude Battery (1967-80) are the two tests for which data were reported. The Gates, Levels D, E, or F, is utilized as a screening test for all recruits who enter the Navy. An algorithm is used with the paragraph comprehension and verbal expression scores for the Armed Services Vocational Aptitude Battery to estimate the reading skill level of each recruit and to assign the appropriate level of the Gates. During the time period covered by this study, the recruits who scored below the 6.0 RGL on the first administration of the Gates were retested with an alternate form of Level D. (The data from the first administration of the Gates are used in this study.) Recruits who scored below the 6.0 RGL on the second administration of the Gates were assigned to ART. (Recruits may also be assigned to ART if they encounter academic difficulties during recruit training.) The 6.0 RGL is not included as a possible score on the test norms.

The Armed Services Vocational Aptitude Battery (ASVAB) is administered to all recruits before they enlist in the Navy. The recruits included in this study had taken one of two series of ASVAB tests: Series 5-7 or Series 8-10. The aptitude score used in the study was the Armed Forces Qualification Test (AFQT) score. The AFQT is a normative percentile score that is derived from a composite of selected ASVAB scores. The scores used in the composite for ASVAB series 5-7 are the word knowledge, numerical operations, and space perception scores. On ASVAB series 8-10, the composite uses the word knowledge, paragraph comprehension, arithmetic reasoning, and numerical operations scores.

The monthly CMI reports provided means for years of education, AFQT scores of recruits classified by the 6.0 RGL criterion (above or below), and RGL scores. The median was calculated for RGL scores by month. Frequency distributions were compiled and percentage distributions were computed for all recruits on RGL categories, high school graduation status, and combinations of the variables on high school graduation status and the 6.0 RGL criterion. Proportions were calculated for high school graduate and non-high school graduate recruits who scored below the 6.0 RGL criterion.

A tabular format was used to present the means and medians as descriptive statistics. The Chi-square technique and confidence limits for differences in proportions were employed for the analyses related to testing the hypotheses. The Chi-square procedure provided comparisons of frequency distributions for RGL scores, high school graduation status, and the 6.0 RGL criterion and high school graduation status by month of entry into the Navy. Confidence interval limits were computed to compare the proportions of high school graduates and non-high school graduates who scored below the 6.0 RGL by month and composite group.

Results

The results of the study are reported in a series of nine tables. The descriptive data are depicted in the first three tables. The remainder of the tables present the data and results of the inferential analyses related to the hypotheses.

Descriptive Data

Table 1 contains the means on years of education by month of entry into the Navy for the recruits. The composite mean for the one-year time period was 11.9 years of education. The monthly means varied by only two months from 11.8 to 12.0 years. Means of 11.9 years occurred for nine months--June - December, 1984, and February and May, 1985.

The means presented in Table 2 are derived from the AFQT percentile scores of recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The composite means were 38.3 for all recruits who scored below the 6.0 RGL and 58.3 for all recruits who scored above the 6.0 RGL. Among the recruits with RGL scores below 6.0, the monthly means ranged from 33.6 in October, 1984, to 41.3 in September, 1984. Among the recruits with RGL scores above 6.0, the monthly means varied from a low of 57.0 in November, 1984, to a high of 59.5 in June, 1984. The differences in the means for the low and high RGL groups were 20 percentile points for the composite means and ranged from 17 to 25 points by month. The differences between the low and high RGL groups were somewhat variable during the 12-month period.

The medians and means for RGL of recruits by month of entry into the Navy are reported in Table 3. The median for the composite group was 12.0 RGL while the mean was 9.9 RGL. The monthly medians ranged from 11.6 RGL in July, 1984, to 12.0 RGL in seven months throughout the 12 months. The means by month varied from a low of 9.8 RGL in July and December, 1984, and March, 1985, to a

TABLE 1
MEANS ON YEARS OF EDUCATION FOR RECRUITS BY MONTH OF ENTRY

<u>Month</u>	<u>N</u>	<u>Mean</u>
June, 1984	8,892	11.9
July, 1984	8,643	11.9
August, 1984	7,697	11.9
September, 1984	6,683	11.9
October, 1984	902	11.9
November, 1984	7,019	11.9
December, 1984	5,219	11.9
January, 1985	7,836	12.0
February, 1985	6,263	11.9
March, 1985	6,854	11.8
April, 1985	5,373	11.8
May, 1985	6,293	11.9
TOTAL	77,674	11.9

TABLE 2

MEANS ON THE ARMED FORCES QUALIFICATION TEST SCORES FOR RECRUITS
BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

<u>Month</u>	<u>Reading Grade Level Criterion</u>			
	<u>Below 6.0</u>		<u>Above 6.0</u>	
	<u>N</u>	<u>Mean</u>	<u>N</u>	<u>Mean</u>
June, 1984	281	38.5	8,611	59.5
July, 1984	283	40.6	8,360	57.8
August, 1984	217	37.1	7,480	59.1
September, 1984	147	41.3	6,536	58.3
October, 1984	42	33.6	860	58.6
November, 1984	177	36.8	6,842	57.0
December, 1984	183	36.3	5,036	57.9
January, 1985	241	38.2	7,595	58.9
February, 1985	187	38.4	6,076	57.7
March, 1985	210	38.6	6,644	58.0
April, 1985	156	36.8	5,217	57.6
May, 1985	179	39.4	6,114	59.0
TOTAL	2,303	38.3	75,371	58.3

TABLE 3
 MEDIAN AND MEANS ON READING GRADE LEVEL FOR RECRUITS
 BY MONTH OF ENTRY

<u>Month</u>	<u>N</u>	<u>Median</u>	<u>Mean</u>
June, 1984	8,892	12.0	9.9
July, 1984	8,643	11.6	9.8
August, 1984	7,697	12.0	9.9
September, 1984	6,683	12.0	10.0
October, 1984	902	11.9	10.0
November, 1984	7,019	12.0	9.9
December, 1984	5,219	11.7	9.8
January, 1985	7,836	11.9	9.9
February, 1985	6,263	12.0	9.9
March, 1985	6,854	11.9	9.8
April, 1985	5,373	12.0	9.9
May, 1985	6,293	12.0	10.0
TOTAL	77,674	12.0	9.9

high of 10.0 RGL in September - October, 1984 and May, 1985. The monthly medians and means did not reveal appreciable variability during the one-year time period.

Hypothesis 1

There are no differences in the distributions of recruits classified by RGL category and month of entry into the Navy. Table 4 presents the frequency and percentage distributions of recruits by RGL category and month of entry. The data on the composite group for the one-year period showed that 2.96% of the recruits had scores below the 6.0 RGL criterion--the criterion for referral to ART during this time period. The percentage of recruits who scored below the 6.0 RGL varied considerably among the 12 months as evidenced by a range from 2.20% in September, 1984, to 4.66% in October, 1984. The percentage of recruits who scored at or below the 8.0 RGL was 13.53% for the year with a monthly low of 11.55% in May, 1985, and a monthly high of 15.56% in December, 1984. For the composite group, 15.61% of the recruits were in the 8.1-10.0 RGL category and 25.33% were in the 10.1-12.0 RGL category. The monthly percentages varied only about 2% for each of the RGL categories. Although 45.52% of the composite group had RGL scores above 12.0, the monthly percentages ranged from 42.28% in July, 1984, to 47.64% in May, 1985. The Chi-square comparison of the RGL distributions of recruits by month of entry revealed significant differences across the 12 months, thereby leading to rejection of the null hypothesis tested at the .05 level of significance.

Hypothesis 2

There is no difference in the distributions of recruits classified by high school graduation status and month of entry into the Navy. The frequency and percentage distributions of recruits classified by high school graduation

TABLE 4

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
BY READING GRADE LEVEL AND MONTH OF ENTRY

Month	Below 4.0		4.0-6.0		6.1-8.0		8.1-10.0		10.1-12.0		above 12.0		Total
	f	%	f	%	f	%	f	%	f	%	f	%	f
June, 1984	62	.70	219	2.46	972	10.93	1,373	15.44	2,173	24.44	4,093	46.03	8,892
July, 1984	93	1.08	190	2.20	1,059	12.25	1,432	16.57	2,215	25.63	3,654	42.28	8,643
August, 1984	50	.65	167	2.17	743	9.65	1,217	15.81	2,004	26.04	3,516	45.68	7,697
September, 1984	34	.51	113	1.69	661	9.89	1,020	15.26	1,780	26.63	3,075	46.01	6,683
October, 1984	10	1.11	32	3.55	79	8.76	140	15.52	242	26.83	399	44.24	902
November, 1984	37	.53	140	1.99	761	10.84	1,028	14.65	1,793	25.54	3,260	46.45	7,019
December, 1984	52	1.00	131	2.51	629	12.05	805	15.42	1,313	25.16	2,289	43.86	5,219
January, 1985	55	.70	186	2.37	854	10.90	1,209	15.43	1,932	24.66	3,600	45.94	7,836
February, 1985	48	.77	139	2.22	652	10.41	955	15.25	1,555	24.83	2,914	46.53	6,263
March, 1985	52	.76	158	2.31	722	10.53	1,093	15.95	1,746	25.47	3,083	44.98	6,854
April, 1985	30	.56	126	2.35	533	9.92	848	15.78	1,358	25.27	2,478	46.12	5,373
May, 1985	39	.62	140	2.22	548	8.71	1,008	16.02	1,560	24.79	2,998	47.64	6,293
TOTAL	562	.72	1,741	2.24	8,213	10.57	12,128	15.61	19,671	25.33	35,359	45.52	77,674

Chi-square = 187.577 (Chi-square = 73.31, df = 55, level of significance = .05)

status are reported in Table 5. The data revealed that about 88% of the recruits were high school graduates. The percentages of high school graduates were relatively higher during July, 1984 - February, 1985. The lowest percentages were in March - May, 1985. The comparison of the frequency distributions of recruits on high school graduation status by month of entry utilizing the Chi-square procedure indicated that the distributions differed very significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 3

There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy. Table 6 contains the frequency and percentage distributions of high school graduate recruits by the 6.0 RGL criterion and month of entry. The data for the composite group indicated that 3.08% of the high school graduate recruits scored below the 6.0 RGL on comprehension. The monthly percentages varied from a low of 2.14% in September, 1984, to a high of 5.13% in October, 1984. A consistent pattern is not evident among the monthly percentages for the 12-month period. The results of the Chi-square comparison of the frequency distributions for high school graduate recruits by the 6.0 RGL criterion and month of entry showed that they differed significantly at the .05 level of significance. Consequently, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 4

There is no difference in the distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The frequency and percentage distributions of non-high school graduate recruits

TABLE 5

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

Month	High School Graduate				Total
	Yes		No		
	f	%	f	%	
June, 1984	7,699	86.58	1,193	13.42	8,892
July, 1984	7,739	89.55	903	10.45	8,642
August, 1984	6,976	90.66	719	9.34	7,695
September, 1984	6,110	91.43	573	8.57	6,683
October, 1984	779	86.36	123	13.64	902
November, 1984	6,348	90.49	667	9.51	7,015
December, 1984	4,633	88.79	585	11.21	5,218
January, 1985	6,994	89.25	842	10.75	7,836
February, 1985	5,494	87.75	767	12.25	6,261
March, 1985	5,761	84.07	1,092	15.93	6,853
April, 1985	4,475	83.33	895	16.67	5,370
May, 1985	5,150	81.85	1,142	18.15	6,292
TOTAL	68,158	87.77	9,501	12.23	77,659

Chi-square = 642.604 (Chi-square = 19.68, df = 11, level of significance = .05)

TABLE 6

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF HIGH SCHOOL GRADUATE RECRUITS
BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

Month	Reading Grade Level Criterion				Total
	Below 6.0		Above 6.0		
	f	%	f	%	
June, 1984	252	3.27	7,447	96.73	7,699
July, 1984	267	3.45	7,472	96.55	7,739
August, 1984	204	2.92	6,772	97.08	6,976
September, 1984	131	2.14	5,979	97.86	6,110
October, 1984	40	5.13	739	94.87	779
November, 1984	167	2.63	6,181	97.37	6,348
December, 1984	172	3.71	4,461	96.39	4,633
January, 1985	214	3.06	6,780	96.94	6,994
February, 1985	173	3.15	5,321	96.85	5,494
March, 1985	188	3.26	5,573	96.74	5,761
April, 1985	136	3.04	4,339	96.96	4,475
May, 1985	154	2.99	4,996	97.01	5,150
TOTAL	2,098	3.08	66,060	96.92	68,158

Chi-square = 45.446 (Chi-square = 19.68, df = 11, level of significance = .05)

by the 6.0 RGL criterion and month of entry are depicted in Table 7. In the composite group, 2.16% of the recruits who were not high school graduates scored below the 6.0 RGL on comprehension. The monthly percentages varied from a low of 1.50% in November, 1984, to a high of 3.21% in January, 1985. The percentages were generally higher in the first month and latter months of the 12 months. The Chi-square comparison of the frequency distributions of non-high school graduate recruits by the 6.0 RGL criterion and month of entry revealed that they did not differ significantly at the .05 level of significance. Thus, the null hypothesis that the distributions are not different was accepted.

Hypothesis 5

There is no difference in the distributions of recruits scoring below the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy. The frequency and percentage distributions are reported in Table 8 for the recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry. The data showed that 91.10% of the recruits who obtained scores below the 6.0 RGL on comprehension were high school graduates. The monthly percentages ranged from 86.03% in May, 1985 to 95.24% in October, 1984. The percentages tended to be higher in the earlier months and lower in the latter months of the 12-month period. The comparison of the frequency distributions of recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry using the Chi-square technique revealed that they differed significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

TABLE 7

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF NON-HIGH SCHOOL GRADUATE RECRUITS
BY SIXTH GRADE LEVEL CRITERION AND MONTH OF ENTRY

<u>Month</u>	<u>Reading Grade Level Criterion</u>				<u>Total</u>
	Below 6.0		Above 6.0		
	<u>f</u>	<u>%</u>	<u>f</u>	<u>%</u>	
June, 1984	29	2.43	1,164	97.57	1,193
July, 1984	16	1.77	887	98.23	903
August, 1984	13	1.81	706	98.19	719
September, 1984	16	2.79	557	97.21	573
October, 1984	2	1.63	121	98.37	123
November, 1984	10	1.50	657	98.50	667
December, 1984	11	1.88	574	98.12	585
January, 1985	27	3.21	815	96.79	842
February, 1985	14	1.83	753	98.17	767
March, 1985	22	2.01	1,070	97.99	1,092
April, 1985	20	2.23	875	97.77	895
May, 1985	25	2.19	1,117	97.81	1,142
TOTAL	205	2.16	9,296	97.84	9,501

Chi-square = 9.200 (Chi-square = 19.68, df = 11, level of significance = .05)

TABLE 8

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS SCORING BELOW SIXTH
READING GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS
AND MONTH OF ENTRY

Month	High School Graduate				Total
	Yes		No		
	f	%	f	%	
June, 1984	252	89.68	29	10.32	281
July, 1984	267	94.35	16	5.65	283
August, 1984	204	94.01	13	5.99	217
September, 1984	131	89.12	16	10.88	147
October, 1984	40	95.24	2	4.76	42
November, 1984	167	94.35	10	5.65	177
December, 1984	172	93.99	11	6.01	183
January, 1985	214	88.80	27	11.20	241
February, 1985	173	92.51	14	7.49	187
March, 1985	188	89.52	22	10.48	210
April, 1985	136	87.18	20	12.82	156
May, 1985	154	86.03	25	13.97	179
TOTAL	2,098	91.10	205	8.90	2,303

Chi-square = 23.724 (Chi-square = 19.68, df = 11, level of significance = .05)

Hypothesis 6

There is no difference in the proportions of high school graduate and non-high school graduate recruits who score below the 6.0 RGL criterion. Table 9 presents data on the proportions of recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry into the Navy. The data on the proportions of recruits who scored below the 6.0 RGL are discussed above as percentages for high school graduates and non-high school graduates separately. (See Tables 6 and 7.) An inspection of the relative proportions of the two groups revealed that a higher proportion (.0092) of the high school graduates than non-high school graduates obtained scores below the 6.0 RGL criterion for the one-year period. In 10 of the 12 months (except for September, 1984, and January, 1985), the high school graduates had the higher proportion. The confidence limits for the comparison of the difference in the proportions for the composite groups revealed that the overall proportions differed significantly at the .05 level of significance because the limits did not include 0 within the range. The differences were also significant for 10 of the 12 months. In all cases where significant differences were observed, the proportions were higher for the high school graduates than the corresponding proportions for the non-high school graduates. The results of comparing the proportions for the two composite groups required rejection of the null hypothesis of no difference in the proportions at the .05 level of significance.

Conclusions

The Navy's recruit population is described in this study based on data for selected variables that apply to the recruits entering the Navy during a 12-month time period. The conclusions are derived from the descriptive analyses and the results of testing six hypotheses about specific variables.

TABLE 9

COMPARISON OF PROPORTIONS OF RECRUITS SCORING BELOW SIXTH READING
GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

Month	High School Graduate				Confidence Limits		
	Yes		No		.025	to	.975
	N	p	N	p			
June, 1984	7,699	.0327	1,193	.0243	.0035	to	.0133
July, 1984	7,739	.0345	903	.0177	.0120	to	.0216
August, 1984	6,976	.0292	719	.0181	.0057	to	.0165
September, 1984	6,110	.0214	573	.0279	-.0136	to	.0006
October, 1984	779	.0513	123	.0163	.0170	to	.0530
November, 1984	6,348	.0263	667	.0150	.0062	to	.0164
December, 1984	4,633	.0371	585	.0188	.0120	to	.0246
January, 1985	6,994	.0306	842	.0321	-.0079	to	.0049
February, 1985	5,494	.0315	767	.0188	.0078	to	.0186
March, 1985	5,761	.0326	1,092	.0201	.0077	to	.0173
April, 1985	4,475	.0324	895	.0223	.0045	to	.0157
May, 1985	5,150	.0299	1,142	.0219	.0031	to	.0129
TOTAL	68,158	.0308	9,501	.0216	.0076	to	.0108

With regard to years of education, the typical Navy recruit has completed slightly less than 12 years of education. Almost nine tenths of the recruits are high school graduates. The inferential analysis on high school graduation status indicates that higher percentages of high school graduates are included among the recruits during some months than other months during the year.

The aptitude of recruits as reflected by means on the AFQT does not appear to vary in any consistent pattern among the recruits with RGL scores below 6.0 or the recruits with RGL scores above 6.0. The means indicate that recruits who score above the 6.0 criterion have greater aptitude than recruits who score below the 6.0 RGL criterion. The difference in the aptitude score means for the two groups suggests that they are dissimilar populations.

The reading comprehension means of recruits exhibit relative stability across the 12-month period, placing the composite group near the 10th grade level. The median for the year places the group near the 12th grade level. The median for the composite group shows a discontinuation of a previous trend toward higher comprehension levels among recruits as reported for the four preceding 12-month periods (Bowman & Kerr, 1981; Bowman & Kerr, 1982; Bowman & Kerr, 1983; Kerr, Bowman, & Darcy, 1984).

The frequency distributions of recruits by RGL categories reveal differences in the composition of the recruit groups when considered by month of entry into the Navy. Separate analyses of the distributions of high school graduate and non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry indicate that differences also exist across the 12-month period for the high school graduates. Among the high school graduate recruits, the percentages who score below the 6.0 RGL do not seem to reveal any clearly discernible pattern during the year.

Differences exist in the 12-month distributions of recruits who obtain RGL

scores below 6.0 when classified by high school graduation status and month of entry in the Navy. Higher percentages of the recruits who score below the 6.0 RGL are high school graduates in the earlier and latter months of the period. A higher proportion of the composite group of high school graduate recruits score below the 6.0 RGL than is found in the composite group of non-high school graduate recruits. Significant differences exist for the composite groups and for the monthly groups in 10 of the 12 months.

The findings suggest that the recruit population remains relatively stable, showing only slight variability with regard to means on years of education, reading comprehension skills, and aptitude scores. Several variables reveal variability across the 12-month period. Factors for which distributions by month differ include RGL scores, high school graduation status, high school graduate recruits who score above and below the 6.0 RGL criterion, and high school graduation status of recruits who score below the 6.0 RGL. The proportion of recruits who obtain RGL scores below 6.0 also is higher for high school graduates than for non-high school graduates.

This study indicates that the recruits who enter the Navy are likely to vary in different months of the year on some important factors. As a result, ART management personnel need to plan for adjustments in the requirements for resources as the recruit population changes throughout the year. By being aware of the variability in demands, more efficient allocation and utilization of the resources can be achieved for ART and the Recruit Training Centers. The study also demonstrates that information is available through the monthly CMI reports on Navy recruit characteristics to improve the effectiveness of program management. Consistent monitoring of these reports and basic analyses of the data would enable the staff to determine the changes occurring in the composition of the recruit population that affect the ART Program.

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